

## **Charge to the Delta Science Program Independent Review Panel for the BDCP Effects Analysis Review, Phase 3**

The Panel will be charged with assessing the scientific soundness of Chapter 5: Effects Analysis and the associated technical appendices. The Panel will make recommendations for how these might be improved with respect to achieving their stated goals. Specific attention will be given to the following questions:

### *Chapter 5: Effects Analysis*

#### General Questions

1. How well does the Effects Analysis meet its expected goals?
2. How complete is the Effects Analysis; how clearly are the methods described?
3. Is the Effects Analysis reasonable and scientifically defensible? How clearly are the net effects results conveyed in the text, figures and tables?
4. How well is uncertainty addressed? How could communication of uncertainty be improved?
5. How well does the Effects Analysis describe how conflicting model results and analyses in the technical appendices are interpreted?
6. How well does the Effects Analysis link to the adaptive management plan and associated monitoring programs?

#### Review of Specific Analyses

7. Are the analyses related to the north Delta diversion facilities appropriate and does the effects analysis reasonably describe the results? In particular:
  - Was existing empirical information such as Perry et al. 2010 and Newman 2003 incorporated appropriately into the modeling? Where model runs required extrapolation beyond existing data ranges, were assumptions and interpretations appropriate?
  - Does the analysis of the frequency of reverse flows at Georgiana Slough accurately characterize changes in hydrodynamics due to changes in river stage, sea level rise, and Delta habitat restoration?
8. How should the effects of changes in Feather River flows on fish spawning and rearing be characterized? In particular, how should the trade-off between higher spring flows and lower summer flows be interpreted? Does the analysis adequately capture the expected benefits of CM 2, Yolo Bypass Fishery Enhancement?
9. Does the analysis adequately describe the predation and other screen-related effects of the proposed north Delta diversion structures? Is the application of the observed mortality rate at the fish screen of the Glenn-Colusa Irrigation District (GCID) an appropriate assumption for expected mortality at the proposed BDCP north Delta intakes? Are there other studies on salmonid survival at positive barrier fish screens that would be appropriate to apply?
10. Does the effects analysis provide a complete and reasonable interpretation of the results of physical models as they relate to upstream spawning and rearing habitat conditions, particularly upstream water temperatures and flows resulting from proposed BDCP operations?

11. Does the effects analysis use a reasonable method for “normalizing” results from the salvage-density method to the population level for salmonid species?
12. Are the assumptions of the analysis of aquatic habitat restoration food web effects appropriate for covered fish species? Are the conclusions and net effects appropriate?
13. Is the analysis of food web benefits to longfin smelt from habitat restoration appropriate? How well do the analyses link intended food web improvements to improvement in the longfin smelt spring Delta outflow/recruitment relationship?
14. How well does the analysis address population-level effects of the BDCP on white sturgeon?

### *Technical Appendices*

For each Chapter 5 technical appendix:

#### Approach and Analysis

1. How well are the proposed analytical tools defined, discussed and integrated?
2. How clear and reasonable is the scale of analysis?
3. How well were the panel’s earlier comments addressed and applied in the technical appendices/analyses?
4. How well did the technical appendix evaluate the effects of potential BDCP conservation measures on the specified variable(s)?
5. Were the conclusions drawn from the results accurate and did these conclusions appropriately consider uncertainty, including chained statistical uncertainties?

#### Models

6. Were appropriate models used in the technical appendices? If model results conflicted, was this clearly stated and was the conflict appropriately addressed?
7. How well are the models and analyses described, interpreted and summarized?

## Review Materials

- Video Briefing by ICF on changes to Effects Analysis since the Phase 2 review
- Draft Chapter 5: Effects Analysis and Technical Appendices

## Supporting Information

- U.S. Fish and Wildlife Service Staff BDCP Progress Assessment (4/3/13)
- NMFS Progress Assessment and Remaining Issues Regarding the Administrative Draft BDCP Document (4/4/13)
- Perry, R. W., J. R. Skalski, P. L. Brandes, P. T. Sandstrom, A. P. Klimley, A. Amman, and B. MacFarlane. 2010. Estimating Survival and Migration Route Probabilities of Juvenile Chinook Salmon in the Sacramento–San Joaquin River Delta. *North American Journal of Fisheries Management* 30:142–156.
- Newman, K.B. 2003. Modelling paired release-recovery data in the presence of survival and capture heterogeneity with application to marked juvenile salmon. *Statistical Modelling* 3:157-177.
- Draft Responses to Delta Science Program Review Panel Report on BDCP Effects Analysis - November 2011
- Highlights of the BDCP (scheduled for release early December 2013)
- BDCP Public Draft (scheduled for release December 13, 2013)
- NRC 2011 Panel Report - A Review of the Use of Science and Adaptive Management In California's Draft Bay Delta Conservation Plan ([http://www.nap.edu/openbook.php?record\\_id=13148&page=33](http://www.nap.edu/openbook.php?record_id=13148&page=33))
- Science Advisors Draft Report on BDCP Goals and Objectives for Covered Fish Species ([http://baydeltaconservationplan.com/Libraries/2011\\_Working\\_Groups/6-16-11\\_Draft\\_Final\\_BDCP\\_G\\_O\\_Science\\_Advisors\\_Report.sflb.ashx](http://baydeltaconservationplan.com/Libraries/2011_Working_Groups/6-16-11_Draft_Final_BDCP_G_O_Science_Advisors_Report.sflb.ashx))
- Draft BDCP Chapter 1: Introduction
  - Appendix 1.A: Evaluation of Species Considered for Coverage
- Draft BDCP Chapter 3: Conservation Strategy (and relevant appendices)
  - Section 3.1 and 3.2 – Introduction and Methods
  - Section 3.3 – Biological Goals and Objectives
  - Sections 3.4 and 3.5 – Conservation Measures and Important Regional Actions
  - Section 3.6 - Adaptive Management and Monitoring Program
    - Appendix 3.A: Background on the Process of Developing the BDCP Conservation Measures
    - Appendix 3.C: Avoidance and Minimization Measures Appendix
    - Appendix 3.D: Natural Community And Covered Species Habitat Existing Condition—Acreages by Conservation Zone